APPENDIX C

GEOLOGIC, HYDROGEOLOGIC AND GEOTECHNICAL INVESTIGATIONS REPORT

GEOLOGIC, HYDROGEOLOGIC AND GEOTECHNICAL INVESTIGATIONS REPORT

PROPOSED GREGORY CANYON LANDFILL
SAN DIEGO COUNTY, CALIFORNIA

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PREFACE

This report was prepared at the request of the Regional Water Quality Control Board - San Diego Region (RWQCB) to address the elements of the proposed Gregory Canyon Landfill (GCLF) project. It was developed through discussions with, and in response to comments received from the RWQCB with regard to the project Joint Technical Document, which was originally submitted in January 2001. This report incorporates technical data, and provides the analyses and conclusions for the project and incorporated the data from more than six phases of geologic and hydrogeologic characterization.

Initial site characterization was completed by Geotechnical Consultants, Inc. (GCI) for the County of San Diego and the U.S. Department of Interior (GCI, 1989). The second and third phases were completed by Geraghty and Miller (G&M, 1988, 1990). The fourth phase included the work of Woodward-Clyde Consultants completed in 1991 and reported in 1995 (WCC, 1995). The fifth phase included a hydrogeologic study completed by GeoLogic Associates (GLA, 1997), and the sixth phase addressed geotechnical issues (GLA, 1998 and 1999). In support of the EIR for the GCLF project, or in response to comments received on the draft EIR, GLA has also completed additional supplemental studies and reports. The major project reports are provided below.

1. Geotechnical Consultants, 1989, Preliminary assessment of geologic and hydrogeologic conditions, Gregory Canyon site: Draft Environmental Impact Report, Environmental Impact Statement for the North County Class III Landfill, San Diego County, California.

2. Geraghty & Miller, 1988, Phase I hydrogeologic investigation - Proposed North County Landfill, San Diego, California: Consultant's report to Waste Management of North America, Western Region.

3. Geraghty & Miller, 1990, Phase II investigation - Proposed Gregory Canyon Class III Landfill, San Diego County, California: Consultant's report to Waste Management of North America, Western Region.

4. Woodward-Clyde, 1995, Geology and hydrogeology report, Gregory Canyon Landfill, Pala, San Diego County, California: Consultant's report to Gregory Canyon Ltd. (March, 1995).

5. GeoLogic Associates, 1997, Phase 5 - Hydrogeologic investigation for the Gregory Canyon proposed landfill site: Consultant's report to Gregory Canyon Ltd.

6. GeoLogic Associates, 1998, Phase 6 - Geotechnical Investigation for the Gregory Canyon proposed landfill site: Consultant's report to Gregory Canyon Ltd.

7. GeoLogic Associates, 1998, Geophysical Study of Potential Borrow Areas, Proposed Gregory Canyon Landfill, September.

8. GeoLogic Associates, 1998, Leachate Generation Analysis, Proposed Gregory Canyon Landfill, December.

9. GeoLogic Associates, 1999, Technical Memorandum, Geology and Soils, Proposed Gregory Canyon Landfill, November.

10. GeoLogic Associates, 2001, Phase 5 Supplemental Investigation, Results of Pumping Tests, January.

11. GeoLogic Associates, 2001, Addendum to Geotechnical Investigation of the Proposed Access Road and Bridge over San Luis Rey River, April.

12. GeoLogic Associates, 2001, Addendum, Settlement Analyses, Proposed Gregory Canyon Landfill, September.

13. GeoLogic Associates, 2001, Addendum, Leachate Generation Analysis, Proposed Gregory Canyon Landfill, September.

During the course of the investigations completed by GLA, consideration was given to the prescriptive standard design as well as an engineered alternative that would maximize the capacity of the site. As initially designed, the engineered alternative placed the base of the landfill within fractured bedrock below the piezometric surface. The geotechnical investigation (References 5, 6, 9 and 10) addressed the engineered alternative and its design was included in the EIR as the preferred option for the proposed project.

In February 2001, following submittal of the Joint Technical Document (Bryan A. Stirrat & Associates, January 2001), and further discussions with the RWQCB and local enforcement agency (LEA), Gregory Canyon Ltd. (GCL) determined that the prescriptive standard design configuration would be required to move the project forward. In this design configuration, the landfill base grade is above the piezometric surface.

A revised Joint Technical Document was prepared to address the prescriptive standard design in July 2001 (BAS, 2001). In August 2001, following additional discussions with the RWQCB and LEA, GCL agreed to further revise the proposed landfill by incorporating a double composite liner system to provide additional assurance of the long-term protection of groundwater and surface water in the vicinity of the site. In March 2004, following further discussions with the RWQCB, the liner design was enhanced to encapsulate the geocomposite clay liner layer (e.g., the geocomposite clay liner is sandwiched between an upper 80-mil high density polyethylene [HDPE] geomembrane and a lower 60-mil HDPE geomembrane) overlying a drainage layer consisting of a minimum nine-inch thick gravel or equivalent material placed on a 60-mil HDPE liner. As shown on Figure 3-2, these additional layers rest on the existing two-foot thick low-permeability soil layer.

This Geologic, Hydrogeologic and Geotechnical Investigations Report has been prepared at the request of the RWQCB to provide the results of the technical evaluations completed for the project with analyses and conclusions specific to the proposed prescriptive design alternative including the construction of a composite liner system.

The pertinent information in this project-specific document is divided into three chapters. Chapter 1 provides the geologic information for the Gregory Canyon project site, Chapter 2 describes the hydrogeologic conditions of the site and region, and provides the basis for a proposed monitoring and reporting program for the GCLF, and Chapter 3 provides the results of geotechnical analyses conducted in support of the proposed project.